

Stationary

DOD MISSION MODEL

MARCH 1971

PERIOD: 1978-1990

TOTAL MISSIONS: 309 (OPTION B)

1978 MISSIONS: 28 (OPTION B)

MISSIONS USED FOR 1979-1990 ANALYSIS = 281 (OPTION B)

PROVIDED TO NASA MAY 4, 1971, BY:

DIRECTOR OF SPACE
DCS/RESEARCH AND DEVELOPMENT
HDQ., USAF

DOD MISSION MODELS

(OPTION B)

(13-Year Program)

UPDATE, not
used in 1976 model
AUGUST 1971

	<u>MARCH 1971</u>	
TIME SPAN	1978 - 1990	1978-1990
NUMBER OF PROGRAMS	19 / 2 ██████	21 / 4 ██████
NUMBER OF PAYLOAD LAUNCHES	<u>309</u>	<u>334</u>
Comm. Sat.	(34)	(59)
Surveillance Sat.	(50)	(50)
Met. Sat.	(27)	(27)
Nav. Sat.	(56)	(56)
Defense Sat.	(9)	(9)
Support Missions	(130)	(130)
Tech. Sat.	(3)	(3)

DOD COMMUNICATIONS PROGRAMS

(OPTION B)

(12 YE PROGRAM)

MARCH 1971

- MIL SAT COM (12)

TWO MISSIONS

SYNEQ

4000 x 34,500, POLAR

ELIM

- DSCS II (5)
- DSCS III (8)
- DATA RELAY I (3)
- DATA RELAY II (4)

TOTAL (32)

AUGUST 1971

- FLEET SAT COM (10)

ONE MISSION - SYNEQ

- SURV SAT COM SYS (27)

ADD

Δ = 25

THREE MISSIONS

58,000 CIRC, 0°

58,000 CIRC, 30°

58,000 CIRC, 60°

- DSCS II (5)
- DSCS III (8)
- DATA RELAY I (3)
- DATA RELAY II (4)

TOTAL (57)

DOD MISSION MODELS
(SHUTTLE ERA)
 (12 YR)

(OPTION B)

	<u>MARCH 1971</u>	<u>AUGUST 1971</u>
TIME SPAN	1979-1990	1979-1990
NUMBER OF PROGRAMS	19	21
NUMBER OF PAYLOAD LAUNCHES	281	306
Comm. Sat.	(32)	(57)
Surveillance Sat.	(46)	(46)
Met. Sat.	(24)	(24)
Nav. Sat.	(49)	(49)
Defense Sat.	(9)	(9)
Support Missions	(120)	(120)
Tech. Sat.	(1)	(1)

MARCH '71

	<u>SHUTTLE</u>	<u>EXPEND.</u>	<u>TUG</u>	<u>EXPENDABLE ENERGY STAGE</u>
DSCS-II	3		0	3 (AGENA)
DSCS-III	6		4	2 (CENT.)
MIL SAT COM A	5		3	2 (AGENA)
MIL SAT COM B	4	2 (T3B/C)	3	1 (AGENA)
DATA RELAY I	3		0	3 (AGENA)
DATA RELAY II	5		5	
AERO DEFENSE A	10		6	4 (CENT.)
AERO DEFENSE B	11	1 (T3C)	6	5 (CENT.)
MID COURSE SURV.	6		4	2 (CENT.)
OCEAN SURV. I	6		0	
OCEAN SURV. II	8		0	
MET. SAT.	8		4	4 (AGENA)
TRANSIT	0	4 (SCOUT)	0	
DEF. NAV. SAT A	14	4 (T3C)	8	6 (CENT.)
DEF. NAV. SAT C	7	2 (T3C)	4	3 (AGENA)
DEFENSE SAT	9		6	3 (CENT.)
SUPPORT A	55	5 (T3D)	0	
SUPPORT B	55	5 (T3F)	0	
TOTALS	215	23	53	38

DOD MISSION MODEL

(OPTION B)

(281 P/L MISSIONS)

<u>SHUTTLE LAUNCHES</u>	<u>NO.</u>
ETR----- 30%	64
WTR----- <u>70%</u>	<u>151</u>
100%	215

<u>ENERGY STAGES</u>	
AGENA----- 7%	16
CENTAUR----- 10%	22
TUG----- <u>25%</u>	<u>53</u>
42%	91

DOD MISSION MODEL

(OPTION B)

SUPPORT MISSION COSTSPAL CM DRAFT

(281 P/L MISSIONS)

*Payload
cost
model*

<u>PROGRAM</u>		<i>Current est CASE A</i>	<u>MILLIONS 1970 DOLLARS</u>	<i>1985 est CASE C-2</i>
SUPPORT A (PAYLOAD	\$)	\$ 3,574		\$ 1,550
SUPPORT B (PAYLOAD	\$)	<u>6,644</u>		<u>2,740</u>
TOTAL (PAYLOAD	\$)	\$10,218		\$ 4,290

 Δ P/L SAVINGS = \$5,928 M

SUPPORT A (TRANS.	\$)	\$ 641		\$ 577
SUPPORT B (TRANS.	\$)	<u>674</u>		<u>577</u>
TOTAL (TRANS.	\$)	\$ 1,315		\$ 1,154

 Δ TRANS. SAVINGS = \$161 MTOTAL SAVINGS = \$6,089 M*twice too high
on savings*

DOD MISSION MODEL

PAYLOAD PROGRAM COST (EXCLUDING 120 SUPPORT MISSIONS)

(281 P/L MISSIONS)

(MILLIONS OF 1970 \$)

CURRENT EXPENDABLE PAYLOAD COSTS -----	\$ 7,487
SHUTTLE (CASE C-2) PAYLOAD COSTS -----	6,035
PAYLOAD SAVINGS -----	1,462
TRANSPORTATION SAVINGS -----	370
TOTAL DOD SAVINGS (EXCLUDING SUPPORT MISSIONS) -----	\$ <u>1,832</u>

WASH

KONKEL IMPUTED DOD SUPPORT COST DERIVATION
(W/O SPACE STATION ADJUSTMENT)

(1970 Dollars)

excluding losses. (Losses derived below)

Total Payload	Case
Less total RDT&E	21,6
Total Investment and Operations	-9,3
Shuttle Flights	12,2
DOD Support Shuttle Launched	6:
	1:
	5:

From above	12,291 ÷ 514 = 23.
Number of DOD Support Payloads	x12
	2,86

RDT&E: 9,361 ÷ 82 Missions = 114x2 Suppt. Mission	
RDT&E Cycles	= 22
Sum	3,09

Payload losses (Estimated Support Payload Costs 3,096 ÷	
21,652 Total Payload Cost = 14.3% x 403 Case C Payload Losses)	58
Imputed DOD Support Mission Total Estimate	3,154

IMPUTED DOD SUPPORT MISSIONS COST CALCULATIONS

(W/O Space Station Slip Adjustment)

(1970 Dollars)

GAO

1979
24

1985
24

Costs including losses

	Case C	Case C-2
Total Payload	22,055	23,441
Less total RDT&E	-9,361	-9,391
Less expendable launch veh launched payloads	-956	-642
Total Shuttle launched payload invest.&Ops	11,738	13,408

Payload Quantities

Aerospace Report as adjusted, total	696	696
Less DOD support mission payloads	-120	-120
Less expendable launch veh launched payloads (Does not incl. DOD support payloads)	-40	-32
Total Number of Shuttle launched payloads	536	544

Computations including losses

Average cost per shuttle payload: 11,738÷536	21.9	
(Investment & Ops) 13,408÷544		24.6
DOD support mission shuttle payloads, quantity	110	110
DOD support shuttle launched investments&ops. total	2,409	2,706
DOD support mission RDT&E (2 cycles) costs	234	234
DOD support mission payloads expendable launch veh launched costs	239	201
Imputed DOD support mission total	2,882	3,141